

ADIBA MAHBUB PROMA

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Research Interest

Human-Computer Interaction, Machine Learning, Large Language Models, Computational Social Science, Network Analysis, Social Networks, Social Interactions, Climate Change, Policy Issues, AI for Social Good

Education

University of Rochester

Doctor of Philosophy in Computer Science (Human-Computer Interaction, Advisor: Dr. Ehsan Hoque) Jan 2023-Dec 2025
Rochester, NY, USA

University of Rochester

Master of Science in Computer Science Feb 2021-Dec 2022
Rochester, NY, USA

BRAC University

Bachelor of Science in Computer Science and Engineering, Highest Distinction Award (GPA: 3.97) Jan 2016-Dec 2019
Dhaka, Bangladesh

Experience

Graduate Research Assistant, University of Rochester

Rochester Human-Computer Interaction Lab (ROCHCI Lab) 2021-Present
Rochester, NY, USA

Visiting Research Intern, University of Zurich

Advisor: Dr. Fabrizio Gilardi May 2025-Jul 2025
Zurich, Switzerland

Data Science Intern, Tech for Development Unit, BRAC SDP, BRAC Bangladesh

BRAC SDP is an initiative by BRAC NGO to boosts informal sector job placements Feb 2020-Jul 2020
Dhaka, Bangladesh

Instructional Lecturer, Computer Science Department, BRAC University

BRAC University is a private university in Bangladesh Jan 2020-Dec 2020
Dhaka, Bangladesh

Research Assistant, CMED Health(Breast Cancer Research Division)

Startup focused on developing digital health technology for Bangladesh Jan 2018-Jan 2021
Dhaka, Bangladesh

Awards and Recognition

- Selected for Summer Institute in Computational Social Science-Rochester (SICSS-Rochester), 2024
- Selected for Computing Research Association-Widening Participation (CRA-WP) Grad Cohort, and awarded \$1100 as travel grant, 2023
- Selected for CRA-WP Grad Cohort, and awarded \$1500 as travel grant, 2022
- Recipient of Research Grant of BDT 1,000,000 (10000 USD) from ICT Ministry of Bangladesh, 2018
- Vice Chancellor's list for 8/12 semesters, (awarded to students with GPA over 3.9), BRAC University
- Dean's list for 2/12 semesters, (awarded to students with GPA between 3.70-3.9), BRAC University
- Country highest in Mathematics in International Advanced Levels (IAL), 2014
- World highest in Mathematics-B in International General Certificate of Secondary Education (IGCSE), 2013

Journal Publications

- S. Kelty, R. A. Baten, **A. M. Proma**, E. Hoque, J. Bollen, and G. Ghoshal, **The Innovation Trade-off: how Following Superstars Shapes Academic Novelty**, Humanities and Social Sciences Communications, 2025 [Journal Impact factor: 3.7] [\[Publication\]](#)
- M. S. Islam, **A. Proma**, C. Wohn, K. Berger, S. Uong, V. Kumar, K. S. Korfmacher, E. Hoque, **SEER: Sustainable E-commerce with Environmental-impact Rating**, Cleaner Environmental Systems, 2023 [Journal Impact factor: 6.1] [\[Publication\]](#)

Conference Publications

- A. Proma**, N. Pate, J. Druckman, G. Ghoshal, E. Hoque, **Personalizing LLM Responses to Combat Political Misinformation**, ACM UMAP, 2025 [\[Publication\]](#)
- A. Proma**, N. Pate, J. Druckman, G. Ghoshal, H. He, E. Hoque, **How LLMs Fail to Support Fact-Checking**, Center for Informed Democracy And Social - cybersecurity (IDeAS) Conference, 2025 [\[Preprint\]](#)

Preprints

- A. Proma, N. Pate, G. Ghoshal, J. Druckman, E. Hoque, **Personalized Large Language Models Can Increase the Belief Accuracy of Social Networks**, arXiv., 2025 [[Preprint](#)]
- S. Duwal, M. N. Shopnil, A. Tyagi, A. Proma, **Evidence-Grounded Multimodal Misinformation Detection with Attention-Based GNNs**, arXiv., 2025 [[Preprint](#)]
- A. Proma, N. Pate, R. A. Baten, S. Chen, J. Druckman, G. Ghoshal, E. Hoque, **Exploring the Role of Randomization on Belief Rigidity in Online Social Networks**, arXiv., 2024 [[Preprint](#)]

Workshops/Doctoral Consortium

- A. Proma, **Understanding the Rigidity of Beliefs in Temporal Social Networks**, 11th Int'l Conference on Affective Computing and Intelligent Interaction Workshops and Demos(ACIIW), 2023 [[Publication](#)]
- A. Proma, M. S. Islam, S. Ciko, R. A. Baten, E. Hoque, **NADBenchmarks – a compilation of Benchmark Datasets for Machine Learning Tasks related to Natural Disasters**. The Role of AI in Responding to Climate Change, AAAI Fall Symposium Series, 2022 [[Publication](#)]
- M. S. Islam, A. Proma, Y. Zhou, S. N. Akter, C. Wohin, E. Hoque, **KnowUREnvironment: An Automated Knowledge Graph for Climate Change and Environmental Issues**, The Role of AI in Responding to Climate Change, AAAI Fall Symposium Series, 2022 [[Publication](#)]

Talks, Posters and Extended Abstracts

- Extended Abstract/Poster titled ‘The role of LLMs in Tackling Misinformation during the 2024 US Elections’ at **IC2S2**, July 2025
- Extended Abstract/Poster titled ‘Exploring the Role of Randomization on Belief Rigidity in Online Social Networks’ at **IC2S2**, July 2025

Invited Articles

- A. Proma, R. Wachter, E. Hoque. **The Untapped Potential of Computing and Cognition in Tackling Climate Change**, NAE Perspectives, 2023

Research Experience

Using Large Language Models (LLMs) to tackle misinformation

- Designing an LLM pipeline for convincing people out of misinformed beliefs using established trust on news sources

Understanding Belief Rigidity in Temporal Social Networks [[Publication](#)]

- Designed and developed a social media-like platform to conduct case-control studies on how social interaction influences individual belief
- Our results show that increasing randomization in recommendation algorithms can reduce tendency to only stick to like-minded individuals by 22%, emphasizing the importance of optimizing for diversity in social media algorithms

Natural Disaster Dataset Curation Platform for Machine Learning Tasks [[Publication](#)] [[Website](#)]

- Conducted literature review to identify gaps in benchmark datasets for natural disasters, classifying over 30 datasets based on ML task type, domain and dataset type
- Led end-to-end development of dataset curation platform for natural disaster datasets, utilizing low-fidelity prototyping (Figma), and need-finding for a user-centric design

Redesigning Interface to Facilitate Eco-friendly Consumption in Online Platforms [[Publication](#)]

- Conducted a case-control study with 98 participants to explore how interface cues can promote eco-friendly products
- Our system boosted eco-friendly consumption, and scored high (79.18/100) on the System Usability Scale (SUS)
- Our estimates suggest that our custom-built platform can reduce 2.88M tonnes of carbon emission every year in the US

Automated knowledge graph for climate change [[Publication](#)]

- Contributed to building a knowledge graph for climate change and environmental issues, extracting information from scientific literature
- The knowledge graph finds 411,860 facts in the form - subject, object, predicate, where each fact is backed up with scientific evidence

Selected Projects

Questionnaire-based Risk Assessment and Early detection of Breast Cancer in Low-Income Countries

- Developed a questionnaire-based breast cancer risk assessment and early detection algorithm, achieving government grant of BDT 10,000,000 (10000 USD) from Bangladesh ICT Ministry
- Conducted feasibility analysis to develop web-platform functionalities for breast cancer awareness website, focusing on accessibility for individuals with low literacy levels [\[Website\]](#)

Press Coverage

- The CS department highlights my work on the role of technology for climate change [\[Read\]](#)
- Our efforts in undergrad mentoring gets recognized by University of Rochester's News Center [\[Read\]](#)
- Our development of breast cancer screening model gets featured in national Bangladeshi newspapers [\[New Age\]](#), [\[Dhaka Tribune\]](#)

Technical Skills

- **Programming Languages:** Python, R, Java, ReactJS, Javascript, HTML, CSS
- **Frameworks:** LangChain, TensorFlow, Keras, PyTorch, OpenCV, SenticNet
- **Software:** Tableau, Empirica, MongoDB, Figma, Canva, Meteor Galaxy

Teaching Experience

Teaching Assistant, University of Rochester

Sep 2021-Dec 2022

- **Courses conducted:** Human Computer Interaction (CSC-212/412), Technology and Climate Change(CSC 460), Undergraduate Problem Seminar (CSC200H), Database Systems (CSC261)

Instructional Lecturer, BRAC University

Jan 2020-Dec 2020

- **Courses conducted:** Introduction to computing(CSE101), Data Structures(CSE220), Algorithms(CSE221), Microprocessors(CSE341), Compilers(CSE420)

Student Tutor, BRAC University

May 2018-Aug 2019

- **Courses conducted:** Programming Language I (CSE161- Basic Programming in Java), Data Structures (CSE220), Digital Logic Design (CSE260)

Professional Services

- **Committee Member**, Ph.D. Admissions Committee, Department of Computer Science, University of Rochester, 2022
- **Reviewer**, 11th Int'l Conference on Affective Computing and Intelligent Interaction Workshops and Demos(ACIIW 2023), 11th Int'l Conference on Affective Computing and Intelligent Interaction (ACII 2023)

Mentorship

Graduate Research Mentees

(Published a paper together/writing a paper together is marked with *)

- **Neeley Pate***, PhD student in Computer Science, University of Rochester
- **Anik De**, MS student in Data Science, University of Rochester
- **Danni Shi**, MS student in Computer Science, University of Rochester (*currently an Application System Engineer at Samsung Austin Semiconductor*)

Undergraduate Research Mentees

(Published a paper together/writing a paper together is marked with *)

- **Sifeng (Chris) Chen***, Computer Science, University of Rochester
- **Jiamu Tang**, Data Science and Philosophy, University of Rochester
- **Juan Lucena**, Computer Science, University of Rochester
- **Nour Assili**, Data Science, University of Rochester
- **Seif Mohammed**, Computer Science, University of Rochester
- **Stela Ciko***, Computer Science and Business, University of Rochester
- **Yilin Zhou***, Data Science, University of Rochester
- **Roka Hosono**, Computer Science, University of Rochester (*currently MS student in Northeastern University*)
- **Varun Kumar***, Computer Science and Finance, University of Rochester
- **Yufei Li**, Computer Science, University of Rochester

Additional Activities

Testing Assistant, Office of Disability Resources, University of Rochester

Sept 2022 - Present

- Collaborated with administrative staff to ensure students' accessibility needs are met during testing
- Proctored tests for students with accessibility needs

Feature Writer, The Daily Star

Jan 2016-Apr 2020

The Daily Star is one of the leading English newspapers of Bangladesh

- Researched local and international trends; and collaborated with writers for the weekly sections Lifestyle and Next Step
- Wrote over 100 *articles* related to social issues, career development, and musings for print and online platform

Editorial Board Member and Feature Editor, BracuExpress

June 2017-August 2018

BracuExpress is BRAC University's student-run campus newspaper

Dhaka, Bangladesh

- Was part of a 5 people board member to make all administrative decisions related to the campus newspaper
- The role included meeting faculty members to make long-term goals, deciding on content, assigning and training writers, and editing their work

Author, The Mason Jar

- Published two short stories as part of a fiction book published by Worthy Publications